

Impacts of Smallholder Irrigation on Agriculture, Wetland Resources, and Rural Livelihoods: A New Regional Initiative

1. Introduction

Paddy cultivation, lowland agriculture and fish catch are the main rural livelihoods options in the Lower Mekong Basin. Hence, long term conservation and sustainable use, as well as equitable distribution of the benefits, of the wetland resources and flood plain ecosystem are critical issues in the region. In response to this, a regional project, which focuses on analysing impacts of smallholder irrigation on agriculture, wetland resource uses, and rural livelihoods has recently been developed as a joint initiative of the Mekong Wetlands Biodiversity Conservation and Sustainable Use Programme (MWBPO, the World Conservation Union (IUCN) and the International Water Management Institute (IWMI)¹. In particular, this collaborative project plans to analyse issues involved in joint management of wetland resources for agriculture uses as well as other environmental uses (fish and other aquatic lives) in the selected demonstration sites of MWBP. The improved information generated out of the project will directly contribute to improving food security, employment, rural livelihoods, and wetlands management in the selected sites of Lower Mekong region.

2. Study Objectives.

This project plans to analyse impacts of smallholder irrigation (or community managed irrigation systems) on wetland resources, taking an example from selected irrigated agriculture schemes in each of the demonstration sites of the MWBP in Cambodia, Lao PDR and Thailand. The purpose is to evaluate selected direct as well as indirect, short and long term impacts of irrigation development on management and sustainable uses of wetland resources. This will be achieved through participatory research, training and active participation of the provincial and local governmental agencies in the project, thus, building capacity of the provincial and local governments, and of other local organizations, in wetland management, sustainable use of wetlands and related natural resources in the region is other main aspect of the project implementation.

The specific objectives of the project are:

- a) to improve understanding and knowledge base on cross-sectoral interlinkages between water uses for agriculture (smallholder irrigation) and management of wetland resources and rural livelihoods;
- b) to explore and analyse ways for an optimum balance between water uses for agriculture (exploitative uses of water) and water uses for environment services (conservation uses of water);
- c) to analyse and quantify impacts of irrigation on agriculture production, farm income, and their implications for management of wetlands and livelihoods;
- d) to develop and apply methodologies that enable explicit inclusion of the wetland management, sustainable use of natural resources, agriculture practices and other aspects of rural livelihoods in the broader aspect of wetland based systems; and

¹ Consultative Group on International Agricultural Research, which is an umbrella organisation of 17 international research centers for agriculture developments related activities, located across the world, with headquarters in Colombo, Sri Lanka.



- e) to initiate capacity building activities by engaging partners in developing, training and transferring the improved methodologies and tools regarding joint management of smallholder irrigated agriculture and wetland resources in the selected sites.

3. Study Sites in Lower Mekong

The field study sites in the Lower Mekong Basin are Attepeu province of Lao PDR, Stung Treng province of Cambodia, and the Lower Songkhram River Basin of Thailand. In addition to these three sites, one comprehensive trade-off study² on wetlands water uses for agriculture and other aquatic products (fish and others) will be done in That Luang mars, a peri-urban wetland located close to Vientiane city in Laos.

4. Issues on wetlands use for agriculture verses other environmental services

- More than 70 percent of the world's freshwater resources are used for agriculture purpose. Because wetlands are one of the main sources of freshwater supply, they are closely linked to agriculture production, water resource management and wetland protection, not only by hydrological systems but also by farm economy, land productivity, and household employment.
- In the case of raising scarcity of water globally, joint management of water released from wetlands for agriculture and environmental services (fish and other aquatic products) will ensure wetland conservation as well as improving rural livelihoods through improved agriculture productivity. This will also ensure means for minimising the adverse effects of agriculture in the environment.
- Agriculture practices occur in over 50 percent of Ramsar sites and many Ramsar sites are listed in the Montreaux Record (sites in need of priority attention from Ramsar bureau) largely due to threat from intensive agriculture. Hence, the way water for agriculture is managed has large implications for wetlands management and their sustainable use.
- How irrigation use of water in smallholder irrigation (community irrigation) affects wetland resource management and sustainable use of the wetlands are not yet clearly understood in literature, particularly the difference on short term and long term implications of agriculture uses of wetland resources.

5. Project implementing strategy

The project activities are divided into two phases.

Phase A: Detailed project preparation phase (9month):

- Stakeholder consultations;
- Scoping of major problematic issues and concerns, threats, and initial assessments are carried out at each of the three selected demonstration sites;
- Gain a better understanding about problematic issues on irrigated agriculture in each site;
- Initiate one or two specific assessment activities in each demonstration site to analysis interactions of small-holder irrigation and wetlands management, with the aims of enhanced household and community level food security and improve rural livelihood;
- Develop a detailed regional scale proposal will be developed for external funding based on the case study findings.

Phase B: Project implementation phase, 2-3 years. This includes long term action research and implementation of field-level activities in selected sites of MWBP and at national and regional scale. Based

² The That Lung case study will be done in collaboration with National University of Laos, and for which the funding has been recently committed from EEPSEA/IDRC.



on the identified stakeholder policy issues and concerns addressed during Phase A, a detailed project proposal for Phase B work will be developed at the end of Phase A work. The Phase B project will be jointly developed along with the governmental agencies and partners working in the field assessment during the Phase A.

6. Specific Activities planned in Phase A (Oct 2005-Sept 2006):

- In Attapeu (Lao PDR), working with the provincial government agencies, water and rural development agencies, develop methodologies for improved management of irrigated paddy systems and water resources for food security, wetland sustainability and biodiversity conservation. A field survey and assessment will be soon carried out in ban Sii village to analyse multi-dimension of interlinkages between additional water uses for smallholder irrigation and management of wetland resources.
- At Ramsar sites and in Stung Treng province of Cambodia, as a whole, working with the provincial irrigation agencies and other related local agencies, assess smallholder irrigation (supplementary irrigation) management strategies for improving food security, enhancing employment and rural livelihoods, and minimising adverse impacts of irrigation on the wetland ecosystems.
- In the Lower Songkhram River Basin (Thailand), working with the local stakeholders, universities, and other agencies, the project plans to analyse socio-economic impacts of the irrigation schemes on flood plain management and wetland resources uses in general. It also includes economic evaluation of multi-dimension interlinkages of resource uses, and a broad brush economic impacts assessment.
- Out of the field assessment, prepare one technical report and policy brief on wetland management and smallholder irrigation for each of the demonstration site.
- Formulate a detailed proposal for external funding, with a 3-year work plan and collaborative arrangement between IUCN, MWBP and IWMI. This also includes exploring a communication (engagement) with potential donors for such activities in the region.

7. Outputs

This study is expected to provide improved information on impacts of small-scale irrigation (or community managed irrigation) on wetland resources management and various uses of water in the wetland ecosystem. This information is essential to support agriculture development policy as well to provide direct incentives to the farm household and community in better management of the irrigated agriculture, irrigation system, and avoiding the adverse impacts of intensive agriculture, in general. This study will contribute for efficient uses of the natural resources for crop production and better management of the wetland ecosystem.

Planned outputs in Phase A (2006):

1. A brief scoping paper for each demonstration site describing the current situation of small-scale irrigated agriculture, agriculture livelihood issues, and major policy issues for sustainable use of water for smallholder irrigation and environmental services.
2. A brief field level assessment on cross-cutting interactions between smallholder irrigation scheme and wetland management one in each of the three demonstration sites.
3. A policy brief on implication of water uses for smallholder irrigation for wetland management and livelihoods in each of three sites, which will feed into the national and provincial level policy review and assessment related activities of MWBP.
4. A detailed proposal for external funding on evaluation of sustainable management and uses of wetland resources in its interaction with the smallholder irrigation in the Lower Mekong basin.
5. Series of one day workshop and policy dialogue in each demonstration site on joint management of irrigated agriculture and wetlands, and sharing the study findings and Phase B project proposal with the stakeholders and provincial partners in each site.